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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,092	06/24/2003	Daoqiang Lu	42.P16449	2530

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EXAMINER	
COLEMAN, WILLIAM D	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/606,092	LU ET AL.	
	Examiner	Art Unit	
	W. David Coleman	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-26 in the reply filed on January 12, 2005 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaneko et al., U.S. Patent 6,661,939 B2.

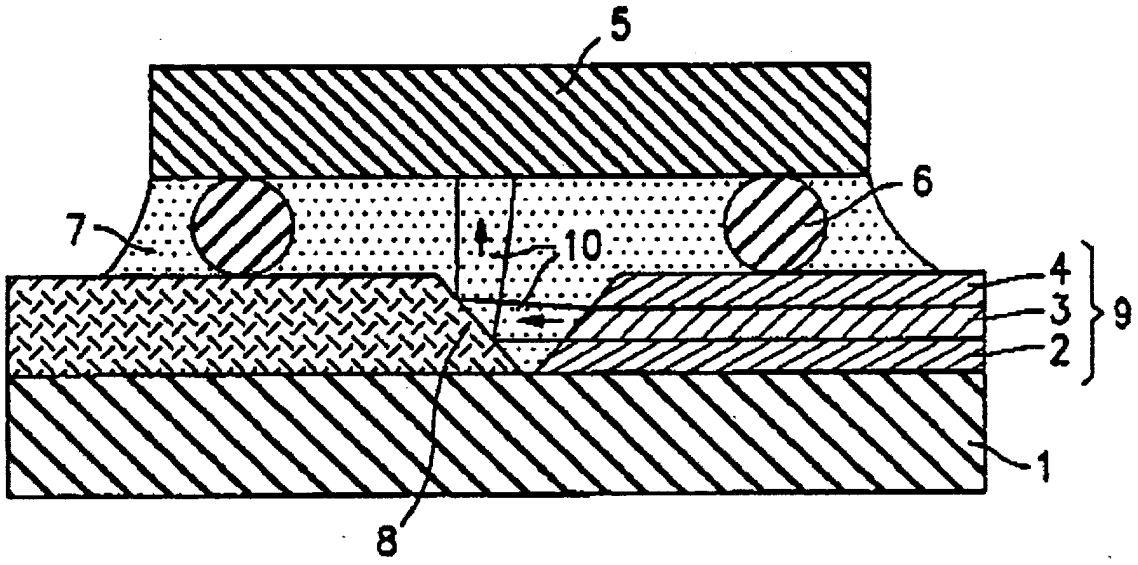
Kaneko discloses a semiconductor apparatus as claimed. Please see **FIGS. 1-3** where Kaneko teaches the following limitations.

4. Pertaining to claim 1, Kaneko teaches an apparatus comprising:

an optical die flip-chip **5** bonded to a substrate 1 and defining a volume between the optical die and the substrate, the optical die including an optically active area **10** on a surface of the die facing the substrate;

an optically transparent material **9** occupying at least those portions of the volume substantially corresponding with the optically active area; and

an underfill material **7** occupying portions of the volume not occupied by the optically transparent material.



5. Pertaining to claim 2, Kaneko teaches the apparatus of claim 1 wherein the optically active area is a detector or a source (column 1, lines 37-39).

6. Pertaining to claim 3, Kaneko teaches the apparatus of claim 1 wherein the optically transparent material has a low modulus of elasticity.

7. Pertaining to claim 4, Kaneko teaches the apparatus of claim 1 wherein the optically transparent material is optically transparent at wavelengths between 800 nm and 1550 nm (please note that 1.55μm is equivalent to 1550nm).

8. Pertaining to claim 5, Kaneko teaches the apparatus of claim 4 wherein the optically transparent material is optically transparent at a wavelength of approximately 850 nm (the Examiner takes the position that since Kaneko teaches VCELs and LEDs comprising such materials as InP, GaAs, InAs, Si, Ge and GaInAsP the wavelength claimed is taught).

9. Pertaining to claim 6, Kaneko teaches the apparatus of claim 1 wherein the optically transparent material has a refractive index of approximately 1.5 (column 9,line 48).

10. Pertaining to claim 7, Kaneko teaches the apparatus of claim 1 wherein the optically transparent material is an adhesive (resin is a type of adhesive).

11. Pertaining to claim 8, Kaneko teaches the apparatus of claim 7 wherein the optically transparent material is silicone based (column 6, line 41).

12. Pertaining to claim 9, Kaneko teaches an apparatus comprising:

an optical die flip-chip **5** bonded to a substrate **1** and defining a volume between the optical die and the substrate, the optical die including an optically active area (not numbered) on a surface of the die facing the substrate;

an optical component **9** partially positioned in the volume between the optical die and the substrate to carry an optical signal to or receive an optical signal from the optically active area;

an optically transparent material occupying those portions of the volume substantially between the optically active area and the optical component; and

an underfill material **7** occupying portions of the volume not occupied by the optically transparent material and the optical component.

13. Pertaining to claim 10, Kaneko teaches the apparatus of claim 9 wherein the optical component is a waveguide.

14. Pertaining to claim 11, Kaneko teaches the apparatus of claim 9 wherein the optically active area is a detector or a source.

15. Pertaining to claim 12, Kaneko teaches the apparatus of claim 9 wherein the optically transparent material has a refractive index substantially the same as a refractive index of the optical component.

16. Pertaining to claim 13, Kaneko teaches the apparatus of claim 9 wherein the optically transparent material has a refractive index of approximately 1.5.

17. Pertaining to claim 14, Kaneko teaches the apparatus of claim 9 wherein the optically transparent material has a low modulus of elasticity.

18. Pertaining to claim 15, Kaneko teaches the apparatus of claim 9 wherein the optically transparent material is optically transparent at wavelengths between 800 nm and 1550 nm.

19. Pertaining to claim 16, Kaneko teaches the apparatus of claim 15 wherein the optically transparent material is optically transparent at a wavelength of approximately 850 nm.

20. Pertaining to claim 7, Kaneko teaches the apparatus of claim 9 wherein the optically transparent material is an adhesive.

21. Pertaining to claim 18, Kaneko teaches the apparatus of claim 9 wherein the optically transparent material is silicone-based.

22. Pertaining to claim 19, Kaneko teaches a system comprising:

a signal source **28** (please see **FIG. 3**);

a first optical die **22** coupled to the signal source, the first optical die being flip-chip bonded to a substrate **1** and defining a first volume between the first optical die and the substrate, the first optical die including an optically active area on a surface of the die facing the substrate;

a signal destination;

a second optical die **23** coupled to the signal destination, the second optical die being flip-chip bonded to a substrate and defining a second volume between the second optical die and the substrate, the second optical die including an optically active area on a surface of the die facing the substrate;

an optical component extending between the first and second optical dies, the optical component partially positioned in the first and second volumes;

an optically transparent material occupying those portions of the first and second volumes substantially between the optically active areas and the optical component; and

an underfill material positioned in the portions of the first and second volumes,

the underfill material occupying portions of the volume not occupied by the optically transparent material.

23. Pertaining to claim 20, Kaneko teaches the system of claim 19 wherein the optical component is a waveguide.

24. Pertaining to claim 21, Kaneko teaches the system of claim 19 wherein the optically active area of the first die is a source and the optically active area of the second die is a detector.

25. Pertaining to claim 22, Kaneko teaches the system of claim 19 wherein the optically transparent material has a refractive index substantially the same as a refractive index of the optical component.

26. Pertaining to claim 23, Kaneko teaches the system of claim 19 wherein the optically transparent material has a refractive index of approximately 1.5.

27. Pertaining to claim 24, Kaneko teaches the system of claim 19 wherein the optically transparent material has a low modulus of elasticity.

28. Pertaining to claim 25, Kaneko teaches the system of claim 19 wherein the optically transparent material is optically transparent at wavelengths between 800 nm and 1550 nm.

29. Pertaining to claim 26, Kaneko teaches the system of claim 25 wherein the optically transparent material is optically transparent at a wavelength of approximately 850 nm.

Conclusion

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856. The examiner can normally be reached on Maxi-flex.

31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W. David Coleman
Primary Examiner
Art Unit 2823

WDC